

## Patent Claims

1. Method for safe data transfer between an intrinsically safe sensor and a non-intrinsically safe computer unit, comprising the steps of:

- A. Converting analog measured values into digital measurement data in a sensor-module of the sensor;
- B. transferring the digital measurement data to a sensor-module head of the sensor via a galvanically decoupled transfer path, and further to a calibration unit;
- C. saving the measurement data to a portable storage medium which is separable from the calibration unit;
- D. transporting the storage medium in separated state to the computer unit;
- E. connecting the storage medium with the computer unit; and
- E. transferring the measurement data to the computer unit via a standard interface provided at the computer unit.

2. Method for safe data transfer between an intrinsically safe sensor and a non-intrinsically safe computer unit, comprising the steps of:

- A. converting analog measured values into digital measurement data in a sensor-module of the sensor;
- B. transferring the digital measurement data to a sensor-module head of the sensor via a galvanically decoupled transfer path, and further to a calibration unit;
- C. transferring the measurement data from the calibration unit to an interface CDI, which is embodied as an Ex-barrier; and
- D. transferring the measurement data from the interface CDI to the computer unit via a standard interface provided at the computer unit.

3. Method as claimed in one of the preceding claims, characterized in that the standard interface at the computer unit is a USB-interface.
4. Method as claimed in one of the preceding claims, characterized in that data transfer between the sensor and the calibration unit occurs with a proprietary protocol in accordance with the RS485 standard.
5. Method for safe data transfer between an intrinsically safe sensor and a non-intrinsically safe computer unit, comprising the steps of:
  - A. converting analog measured values into digital measurement data in a sensor-module of the sensor; and
  - B. transferring the digital measurement data to a sensor-module head of the sensor via a galvanically decoupled transfer path, and further to a plug-in module of the computer unit, with the plug-in module being embodied as an Ex-barrier.
6. Method as claimed in claim 6, characterized in that the plug-in module is a PCMCIA plug-in card.